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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/613,527	07/10/2000	Hiroaki Sudo	JEL 31211	9543

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EXAMINER	
SEFCHECK, GREGORY B	
ART UNIT	**PAPER NUMBER**
2616	

DATE MAILED: 04/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/613,527	SUDO, HIROAKI	
	Examiner	Art Unit	
	Gregory B. Sefcheck	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's Request for Continued Examination filed 1/12/2006 and Amendment filed 2/21/2006 are acknowledged.
- Claims 15-21 have been cancelled.
- Claims 22-28 have been added and are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 22 and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sunaga (US006381233B1) in view of Hakkinen et al. (US006282185B1), hereafter Hakkinen.

- In regards to Claims 22 and 24-28,

Sunaga discloses a spread spectrum communication transmitter and receiver and CDMA mobile communication system and method (Title; Fig. 1 – base station; claims 22,24-28– transmission, reception, communication terminal, base station apparatus and methods).

Referring to Fig. 7, Sunaga discloses transmission by spreading traffic channels and a pilot (known) signal using a specific/different spreading codes at a predetermined

spreading factor (Col. 1; lines 40-55; claim 22,25,26,27 – first spreader that carries out spreading process on transmission signals using different spreading codes; claim 22,25,26,27 – second spreader that carries out spreading process on known signal using spreading code that differs from first spreading codes).

Sunaga discloses that the spread pilot is combined (multiplexed) with similarly spread traffic channels to be simultaneously transmitted over the same frequency band (Col. 1, lines 55-60; claim 22,25,26,27 – transmitter to simultaneously transmit the known signal and transmission signals).

Referring to Fig. 10, Sunaga discloses reception by despreading the received signal using the specific spreading codes for each traffic channel signal and the pilot signal to extract those individual signals at despreaders 8-10 (Col. 2, lines 8-10; claim 24,25,26,28 – first demodulator that carries out despreading process on multiplexed signal using spreading codes of transmission signals to extract the transmission signals; claim 24,25,26,28 – second demodulator that carries out despreading process on multiplexed signal using spreading code of known signal to extract the known signal).

Sunaga further discloses path detector 11 and handover controller 19 to detect multiple paths (phase error) from the pilot signal and received signal and supply a timing signal used for properly-phased despreading of the traffic channels at despreaders 9 and 10 (Col. 2, lines 13-18; claim 24,25,26,28 – phase error detector using known signal and received known signal; claim 24,25,26,28 – phase compensator for phase compensation on received version of each transmission signal).

It is inherent that CDMA spreading codes are used to spread signals at the spreading rate, or chip rate. Subsequent multiplexing and demodulating of the various spread signals are inherently performed at the chip rate.

Sunaga does not explicitly disclose transmission and reception that includes OFDM frequency division multiplexing of the known signal and transmission signals, breaking down the signals into individual chips and assigning the signal chips to subcarriers aligned in a frequency axis direction.

Hakkinen discloses an OFDM-CDMA transmitting and receiving method (Title; Col. 2, lines 28-30). Referring to Figs. 2 and 3, Hakkinen shows that after traffic channels and a pilot channel and/or reference channel are spread and combined at mux 32, they are subjected to OFDM frequency division multiplexing to breaks down the signals into individual chips and assign the chips to subcarriers aligned in a frequency axis direction (Col. 5, lines 24-42; claim 22,24-28 – frequency division multiplexing of the known signal and transmission signals, breaking down the signals into individual chips and assigning the signal chips to subcarriers aligned in a frequency axis direction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the transmission and reception system of Sunaga by utilizing OFDM frequency division multiplexing to break down the signals into individual chips and assign the chips to subcarriers aligned in a frequency axis direction, as shown by Hakkinen. This modification would provide greater tolerance to interference by channel isolation and reducing the number of signals used in multiuser detection.

3. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sunaga in view of Hakkinen as applied to claim 22 above, and further in view of Ziv et al. (US005867527A), hereafter Ziv.

- In regards to Claim 23,

Sunaga discloses a spread spectrum communication transmitter that meets all limitations of the parent claims. Figs. 6A-6D show that the handover controller 19 determines its output based on the highest peak of the pilot signal received (Col. 2-3, lines 47-31).

However, Sunaga does not explicitly disclose the pilot signal having a higher signal level than other transmission signals

Ziv discloses a method of searching for a bursty signal in a spread spectrum communication system (Title; Abstract). Ziv discloses that a pilot channel is transmitted at a higher level than traffic-bearing signals (Col. 8, lines 25-28; claim 23 – known signal has a higher signal level than other transmission signals).

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the method and system of Sunaga by transmitting the pilot signal at a higher level than traffic channels, as shown by Ziv, thus improving the signal-to-noise ratio of the pilot and improving the ability of the receiver to detect the pilot signal such that subsequent reception of the traffic channels can be done properly.

Response to Arguments

4. Applicant's arguments with respect to claims 22-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Zhang (US006975668B2)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory B. Sefcheck whose telephone number is 571-272-3098. The examiner can normally be reached on Monday-Friday, 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GBS GBS
4-19-2006

Seema S. Rao 4/21/06
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